

Remarks

This application has been reviewed in light of the Office Action of October 13, 2004. Claims 1-16 are pending. Claims 1-12 and 14-16 are rejected, and claim 13 is objected to. In response, objected-to claim 13 is written in independent form, and the following remarks are submitted. Reconsideration of this application, as amended, is requested.

Claims 1-5, 9-12, and 14 are rejected under 35 USC 103 as unpatentable over Price US Patent 6,330,800 in view of Hiresaki US patent 5,642,623. Applicant traverses this ground of rejection.

Each of claims 1 and 14 recites in part: "a first-stage Stirling expander". Price teaches a two-stage cryocooler having a Stirling expander and a pulse tube expander (Abstract, first sentence). Hiresaki, however, teaches a modified Gifford-McMahon refrigerator and a pulse tube expander (Figure 1; col. 3, lines 8-13; col. 6, lines 32-42; col. 3, line 25), not a Stirling cycle cooler. Stirling-cycle coolers operate on a different thermodynamic cycle than do the Gifford-McMahon-cycle coolers. Hiresaki mentions the Stirling cycle refrigerators, by way of identifying the Stirling cycle expander as different from the Gifford-McMahon cycle refrigerator (col. 1, lines 19-20), and also to indicate that the compressor of a Stirling cycle refrigerator may be used in the modified Gifford-McMahon cycle refrigerator discussed by Hiresaki.

Thus, there is no basis to combine the approach taught by Hiresaki with that taught by Price. These are different thermodynamic cycles.

Stated alternatively, the construction of the rejection selects only the useful portions of Hiresaki, without regard to the teachings as a whole. Specifically, Hiresaki teaches the use of the Gifford-McMahon cycle as part of its central teaching. If the use of the bypass tube 23 is selected from Hiresaki, then the use of the Gifford-McMahon cycle should also be selected because the bypass tube 23 is specifically taught for use with the Gifford-McMahon device. The selective use of only the helpful teachings of a reference, and not giving weight to the overall teachings of the reference, in this

manner is a per se hindsight reconstruction. This approach is not proper. In In re Mercer, 185 USPQ 774, 778 (CCPA 1975), the CCPA stated:

"The relevant portions of a reference include not only those teachings which would suggest particular aspects of an invention to one having ordinary skill in the art, but also those teachings which would lead such a person away from the claimed invention. See In re Lunsford, 53 CCPA 986, 357 F.2d 380, 148 USPQ 716 (1966)."

"The Board's approach amounts in substance, to nothing more than a hindsight 'reconstruction' of the claimed invention by relying on isolated teachings of the prior art without considering the over-all context within which those teachings are presented. Without the benefit of appellant's disclosure, a person having ordinary skill in the art would not know what portions of the disclosure of the reference to consider and what portions to disregard as irrelevant, or misleading. See In re Wesslau, 53 CCPA 746, 353 F.2d 238, 147 USPQ 391 (1965)."

The explanation of the rejection gives no objective reason why one of ordinary skill would select only the helpful portion of Hiresaki but not adopt the remainder of the teaching as well.

One cannot arbitrarily separate the functioning of the pulse tube expander and the Gifford-McMahon first stage in the teachings of Hiresaki. Figure 11, for example, depicts the combined thermodynamic performance of the two stages. The discussion of Figure 11 speaks of the operation "when optimized with the double inlet type gas cycle refrigerator 1". Hiresaki clearly intends for his teachings to be associated with the Gifford-McMahon first stage, and there is no suggestion or teaching that it may be applied to a Stirling cycle first stage.

Claim 2 recites in part:

"the gas flow shunt provides gaseous communication between a first-

stage regenerator location at which a gas temperature is substantially the same as the gas temperature at the pulse-tube outlet, and the pulse-tube outlet”.

This limitation is not mentioned in the explanation of the rejection. Applicant can find no such teaching in the references. If the rejection is maintained, Applicant asks that the Examiner indicate the source, if any, of this teaching in the references.

Each of claims 4 and 5 recites in part:

“the pulse-tube outlet is maintained at the same temperature as the second-stage regenerator inlet”

This limitation is not mentioned in the explanation of the rejection. Applicant can find no such teaching in the references. If the rejection is maintained, Applicant asks that the Examiner indicate the source, if any, of this teaching in the references.

The explanation for the rejection of claim 9 relies on “design choice”. The concept of “obvious matter of design choice” is not intended to substitute for statutory prior art. It provides a means by which one of several realistic alternatives presented by statutory prior art may be selected, absent surprising or unexpected advantages. It is to be used only where the applied statutory prior art sets forth a list of realistic alternative selections, and it would be a matter of design choice to select one member from the list. In this case, the prior art of record presents no such design choice, and accordingly the application of “obvious matter of design choice” is not appropriate here. This amounts to a “well known in the art” type of rejection. Applicant traverses this approach, and asks for the citation and application of proper statutory prior art or other evidence supporting the rejections, MPEP 2144.03. If the rejection is maintained, Applicant asks that the Examiner cite and apply statutory prior art, pursuant to MPEP 2144.03.

The design choice is argued to be obvious because “one of ordinary skill in the art would realize that this means less than half of the flow through the bypass and

would experiment to find the proper amount". There is no basis for the "less than half" assertion. As to the assertion regarding "experiment", MPEP 2144.05 II B, states that "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." This mandate, which is supported in the cited MPEP section by citations to the case authority, means that the prior art must first recognize that a particular parameter should be optimized before its optimization is a matter of routine experimentation. This position of the MPEP makes good sense. If the nature of the invention includes first recognizing that a particular parameter may be optimized to achieve desirable results in the claimed subject matter, then the subsequent optimization cannot be a matter of routine. Here, nothing in either reference suggests that the flow capacity of the second gas path is a result-effective variable, and accordingly there is no reason to experiment on its value.

The prior discussion of the rejection of claim 1 is incorporated as to claim 14. Claim 14 also recites "the second gas-flow path has a flow capacity of from about 5 to about 30 percent of the first gas-flow path", and Applicant incorporates the discussion of the rejection of claim 9. Claim 14 also recites "the pulse-tube outlet is maintained at the same temperature as the second-stage regenerator inlet", and Applicant incorporates the discussion of the rejection of claims 4-5.

As to all of the claims, the present rejection is a sec. 103 combination rejection. It is well established that a proper sec. 103 combination rejection requires more than just finding teachings in the references of the elements recited in the claim (but which was not done here). To reach a proper teaching of an article or process through a combination of references, there must be stated an objective motivation to combine the teachings of the references, not a hindsight rationalization in light of the disclosure of the specification being examined. MPEP 2143 and 2143.01. See also, for example, In re Fine, 5 USPQ2d 1596, 1598 (at headnote 1) (Fed.Cir. 1988), In re Laskowski, 10 USPQ2d 1397, 1398 (Fed.Cir. 1989), W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 311-313 (Fed. Cir., 1983), and Ex parte Levensgood, 28 USPQ2d 1300

(Board of Appeals and Interferences, 1993); Ex parte Chicago Rawhide Manufacturing Co., 223 USPQ 351 (Board of Appeals 1984). As stated in In re Fine at 5 USPQ2d 1598:

"The PTO has the burden under section 103 to establish a prima facie case of obviousness. [citation omitted] It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references."

And, at 5 USPQ2d 1600:

"One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

Following this authority, the MPEP states that the examiner must provide such an objective basis for combining the teachings of the applied prior art. In constructing such rejections, MPEP 2143.01 provides specific instructions as to what must be shown in order to extract specific teachings from the individual references:

"Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention when there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)."

* * * * *

"The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also

suggests the desirability of the combination." In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)."

* * * * *

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. Ex parte Levengood, 28 USPQ2d 1300 (Bd.Pat.App.& Inter. 1993)."

Here, there is set forth no objective basis for combining the teachings of the references in the manner used by this rejection, and selecting the helpful portions from each reference while ignoring the unhelpful portions. An objective basis is one set forth in the art or which can be established by a declaration, not one that can be developed in light of the present disclosure. The rationale urged in the explanation of the rejection, "to improve the frequency matching with the first stage", is found only in the present application, not in any of the references, as far as Applicant can determine. See col. 4, lines 37-49 of Hiresaki. If the rejection is maintained, Applicant asks that the Examiner set forth the objective basis found in the references themselves for combining the teachings of the references, and for adopting only the helpful teachings of each reference and disregarding the unhelpful teachings of the reference.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Claims 1, 2, 6-11, 15, and 16 are rejected under 35 USC 103 over Price '800 in view of Gao US Patent 6,256,998. Applicant traverses this ground of rejection.

Applicant incorporates the prior discussion of the rejection of claim 1. The attempt to combine the teachings of Gao with those of Price has many of the same

problems as discussed in relation to Hiresaki. Most importantly, Gao also does not teach a Stirling cycle. Applicant does not know whether Gao's thermodynamic cycle corresponds to any known standard thermodynamic cycle, in view of the valves 34-37 and their specialized pattern of operation and in view of the first pulse tube 12 interconnected into the system, but it is clearly not a Stirling cycle. If some of the teachings of Gao are to be adopted, they all must be adopted, as the selective adoption of just the helpful teachings is a per se hindsight reconstruction. Gao's system necessarily has the valves 34-37 with a specialized timing, see Figures 2, 4, 6, and 11.

Applicant incorporates the prior discussion of the rejection of claim 2, and the associated request.

Each of claims 7 and 8 recites in part:

"the pulse-tube outlet is maintained at an ambient temperature"

This limitation is not mentioned in the explanation of the rejection. Applicant can find no such teaching in the references. If the rejection is maintained, Applicant asks that the Examiner indicate the source, if any, of this teaching in the references.

As to claims 9 and 16, Applicant incorporates the prior discussion of the rejection of claim 9.

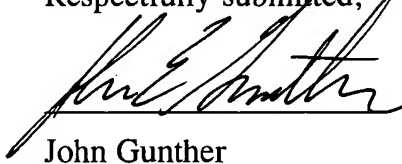
The prior discussion of the rejection of claim 1 is incorporated as to claim 15. Claim 15 also recites "the pulse-tube outlet is maintained at ambient temperature", and Applicant incorporates the discussion of the rejection of claims 6-7. Claim 15 also recites "the pulse-tube outlet is maintained at ambient temperature". This limitation is not mentioned in the explanation of the rejection. Applicant can find no such teaching in the references. If the rejection is maintained, Applicant asks that the Examiner indicate the source, if any, of this teaching in the references.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Applicant submits that the application is now in condition for allowance, and requests such allowance.

November 10, 2004

Respectfully submitted,

A handwritten signature in black ink, appearing to read "John Gunther", written over a horizontal line.

John Gunther

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Agent for Applicant